

Remarks

This application has been reviewed in light of the Office Action of April 4, 2006. Claims 1-6 and 8-24 are pending, and all claims are rejected. In response, the following remarks are submitted. Reconsideration of this application, as amended, is requested.

Ground 1. Claims 1, 6 and 8-11 are rejected under 35 USC 102 as anticipated by Vincent U.S. Patent 3,906,123. Applicant traverses this ground of rejection.

The following principle of law applies to sec. 102 rejections. MPEP 2131 provides: "A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference. The identical invention must be shown in as complete detail as is contained in the ... claim. The elements must be arranged as required by the claim..." [citations omitted] This is in accord with the decisions of the courts. Anticipation under section 102 requires 'the presence in a single prior art disclosure of all elements of a claimed invention arranged as in that claim.' Carella v. Starlight Archery, 231 USPQ 644, 646 (Fed. Cir., 1986), quoting Panduit Corporation v. Dennison Manufacturing Corp., 227 USPQ 337, 350 (Fed. Cir., 1985).

Thus, identifying a single element of the claim, which is not disclosed in the reference, is sufficient to overcome a sec. 102 rejection.

Vincent discloses a three-layer system applied to the surface of a support, to make a pressure-sensitive record system (col. 1, lines 5-9). The first layer adjacent to the surface has an encapsulated color-reactant material, the second layer overlying the first layer is a pressure-rupturable barrier layer, and the third layer overlying the second layer has an absorbent electron-acceptor material. When a pressure such as produced by a pencil or pen is applied to the three-layer system and the support, the membranes rupture, and the color-reactant material and the electron-acceptor material mix to produce color. This approach requires that three layers with separated, unmixed chemical be sequentially applied to the surface of the support.

Claim 1 recites in part:

"preparing an indicator paint..., wherein the indicator paint comprises a mixture of a first reactant and a second reactant separated by a barrier that is

rupturable so that the first reactant and the second reactant mix and produce the visible change when the indicator paint is subjected to the impact”
applying the indicator paint to the surface of the material...”

Vincent describes how its three-layered material is prepared and applied. First the microcapsular coating is applied and dried, and then the barrier coating is applied thereover (col. 3, lines 15-16). After the barrier coating is dried, the absorbent coating is applied over the dried barrier layer (col. 4, lines 7-9). Example 1 at col. 6, lines 49-66 concisely describes the whole sequence of applying the coating layers individually, and drying the applied coating before applying the next coating.

At no point does Vincent disclose preparing a paint as a mixture of first and second reactants, and then applying the indicator-paint mixture to a surface.

Claim 1 further recites in part:

“preparing an indicator paint having an impact-sensitive component...”

There is no disclosure in Vincent of an “impact-sensitive component.” The explanation of the rejection references col. 4, lines 1-14 of Vincent for this disclosure, but no such disclosure appears at this location or elsewhere in Vincent.

Amended claim 1 further recites in part:

“placing the material having the indicator paint thereon into circumstances where it may be subject to the mechanical impact.”

Vincent does not disclose either of these limitations. Vincent does not disclose preparing an indicator paint that is a mixture of a first reactant and a second reactant, and applying that indicator paint to the surface. Vincent applies a coating in three layers whose components are not mixed together. Vincent does not disclose the use of an indicator paint in circumstances of mechanical impact.

Claim 6 recites in part:

“preparing the indicator paint having the impact-sensitive component that changes color when subjected to the mechanical impact.”

Vincent has no disclosure, and the explanation of the rejection does not identify any location in Vincent allegedly having such a disclosure.

Claim 8 recites in part:

“the step of preparing the indicator paint includes the step of
preparing the indicator paint comprising
an encapsulated first reactant, and
the second reactant,
wherein the first reactant and the second reactant react together to produce
the visible change upon the impact.”

Vincent has no such disclosure. The explanation of the rejection asserts that “the first reactant and the second reactant react together” but does not address the claim limitation. The recited limitation requires that the two components be mixed together, and then this mixture be applied to the surface.

Claim 9 recites a negative limitation:

“preparing the indicator paint that does not emit light when subjected
to the mechanical impact.”

The explanation of the rejection does not point to any location in Vincent where such a negative limitation is set forth. When a negative limitation is recited, there must be a disclosure of the negative limitation in order to support a sec. 102 rejection.

Claim 10 recites another negative limitation:

“not instrumenting the material having the paint thereon with light-
detection instrumentation.”

The explanation of the rejection does not point to any location in Vincent where such a negative limitation is set forth. When a negative limitation is recited, there must be a disclosure of the negative limitation in order to support a sec. 102 rejection.

The Response to Arguments fails to address these limitations, even though this ground of rejection was not altered as to the rejected claims.

Applicant asks that the Examiner reconsider and withdraw this ground of rejection.

Ground 2. Claim 20 is rejected under 35 USC 102 over Patel U.S. Patent 5,254,473. Applicant traverses this ground of rejection.

Claim 20 recites in part:

"a paint applied to the surface of the article, wherein the paint comprises

a plurality of microcapsules, and wherein each microcapsules comprises a first reactant, and

a matrix comprising a paint binder and a second reactant, wherein the plurality of microcapsules is mixed with and embedded in the matrix,"

Patel discloses a system wherein a number of reactants are mixed together in their inert states (col. 2, line 56-col. 3, line 34). When the temperature is changed, the reactants react together (col. 2, line 65-col. 3, line 2). There is no disclosure of placing a first reactant in a microcapsule, and placing a second reactant in a matrix in which the microcapsules are embedded. Instead, the entire mixture can be placed into a microcapsule (col. 3, lines 41-43).

The explanation of the rejection references col. 8, lines 21-25; col. 7, lines 19-46 and 67-68; and col. 8, lines 1-35. All of these portions are fully in accord with Applicant's explanation set forth above. Patel does not put some of his reactants inside a microcapsule and others of the reactants outside of the microcapsule, as would be required to anticipate claim 20.

Ground 3. Claims 21-23 are rejected under 35 USC 102 over Yamamura U.S. Patent 4,618,529. Applicant traverses this ground of rejection.

Yamamura discloses a ceramic material that is reinforced with inorganic fibers (Abstract, claim 1, col. 2, lines 29-48). Although the explanation of the rejection refers to "an indicator coating applied thereto," Yamamura has no disclosure of an indicator coating. The explanation of the rejection references col. 4, lines 58-68; col. 5, lines 21-40; and col. 6, lines 52-53 as related to design standards for materials having an indicator coating applied thereto. None of these portions of Yamamura, nor any other portion of Yamamura, mentions indicator coatings in any way. Col. 4, lines 58-68 discloses a list of materials that may be used for the ceramic matrix. Col. 5, lines 21-40 discloses a list of materials that

may be used as binders during sintering. Col. 6, lines 52-53 discloses the critical stress intensity factor K_{IC} , which is a measured material property, not a design standard. (See col. 6, lines 62-64 for a discussion of how the critical stress intensity is measured on the ceramic or composite material.)

The explanation of the rejection references col. 6, lines 52-64 of Yamamura as disclosing design standards when there is no indicator coating applied thereto. Col. 6, lines 52-64 make no reference to design standards. This paragraph of Yamamura discusses the critical stress intensity factor K_{IC} , and makes no mention of the presence or absence of coatings.

Claim 21 recites in part:

"setting a first design standard for the low-ductility material having an indicator paint applied thereto."

Yamamura has no disclosure of a first design standard when an indicator paint is applied thereto.

Claim 21 further recites in part:

"the indicator paint has an impact-sensitive component that produces a visible change when subjected to a mechanical impact;"

Yamamura has absolutely no disclosure of an impact-sensitive indicator paint or coating of any type.

Claim 21 further recites in part:

"setting a second design standard for the low-ductility material which does not have the indicator paint applied thereto."

Yamamura has no disclosure of setting a second design standard when there is no indicator paint applied thereto, because Yamamura has no disclosure of indicator paints at all.

In short, Yamamura has nothing to do with the subject matter of claims 21-23, the setting of design standards in the presence and absence of indicator paints.

Applicant asks that the Examiner reconsider and withdraw this ground of rejection.

Ground 4. Claims 2-5, 14-17, and 24 are rejected under 35 USC 103 over Vincent in view of Szveda U.S. Patent 5,488,017. Applicant traverses this ground of rejection.

MPEP 2142, under ESTABLISHING A PRIMA FACIE CASE OF OBVIOUSNESS, provides: "To establish a prima facie case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine the reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on applicant's disclosure. [references omitted]. See MPEP para 2143-2143.03 for decisions pertinent to each of these criteria.

Addressing the third requirement, the following principle of law applies to all sec. 103 rejections. MPEP 2143.03 provides "To establish prima facie obviousness of a claimed invention, all claim limitations must be taught or suggested by the prior art. In re Royka, 490 F.2d 981, 180 USPQ 580 (CCPA 1974). All words in a claim must be considered in judging the patentability of that claim against the prior art. In re Wilson, 424 F.2d 1382, 1385, 165 USPQ 494, 496 (CCPA 1970)." [emphasis added] That is, to have any expectation of rejecting the claims over a single reference or a combination of references, each limitation must be taught somewhere in the applied prior art. If limitations are not found in any of the applied prior art, the rejection cannot stand. In this case, the applied prior art references clearly do not arguably teach some limitations of the claims.

Claims 2-5 depend from claim 1, and incorporate its limitations. Vincent does not teach the limitations of claim 1 for the reasons discussed in relation to the Ground 1 rejection and which are incorporated here. Szveda adds nothing in this regard. Szveda has nothing to do with an indicator paint or anything remotely similar to an indicator paint.

Claim 1 recites in part:

"preparing an indicator paint..., wherein the indicator paint comprises a mixture of a first reactant and a second reactant separated by a barrier that is rupturable so that the first reactant and the second reactant mix and produce the visible change when the indicator paint is subjected to the impact"
applying the indicator paint to the surface of the material..."

Amended claim 1 further recites in part:

"placing the material having the indicator paint thereon into circumstances where it may be subject to the mechanical impact."

Neither references teaches either of these limitations. Vincent does not teach preparing an indicator paint that is a mixture of a first reactant and a second reactant, and applying that indicator paint to the surface. Vincent does not teach the use of an indicator paint in circumstances of mechanical impact. Szveda has nothing to do whatsoever with indicator paints, and its relevance is unclear.

Claim 14 recites in part:

"preparing an indicator paint having an impact-sensitive component that changes color when subjected to a mechanical impact, wherein the indicator paint comprises
a first reactant, and
a second reactant,
wherein the first reactant and the second reactant are separated by a barrier that is ruptured when the indicator paint is subjected to the mechanical impact;
applying the indicator paint to the surface of the composite material;"

Vincent describes how its three-layered material is prepared and applied. First the microcapsular coating is applied and dried, and then the barrier coating is applied thereover (col. 3, lines 15-16). After the barrier coating is dried, the absorbent coating is applied over the dried barrier layer (col. 4, lines 7-9). Example 1 at col. 6, lines 49-66 concisely describes the whole sequence of applying the coating layers individually, and drying the applied coating before applying the next coating.

At no point does Vincent disclose preparing a paint as a mixture of first and second reactants, and then applying the indicator-paint mixture to a surface. Because Szweda does not relate in any way to indicator paints, it cannot teach the limitations of claim 14.

Claim 14 further recites in part:

"placing the composite material having the indicator paint thereon into circumstances where it may be subject to the mechanical impact; and thereafter

inspecting the composite material having the indicator paint thereon for the presence of a color change."

Neither reference has any such teaching.

A further requirement to establish a prima facie ground of rejection is that there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine the reference teachings. The present rejection is a sec. 103 combination rejection. It is well established that a proper sec. 103 combination rejection requires more than just finding teachings in the references of the elements recited in the claim (but which was not done here). To reach a proper teaching of an article or process through a combination of references, there must be stated an objective motivation to combine the teachings of the references, not a hindsight rationalization in light of the disclosure of the specification being examined. MPEP 2142, 2143 and 2143.01. See also, for example, In re Fine, 5 USPQ2d 1596, 1598 (at headnote 1) (Fed.Cir. 1988), In re Laskowski, 10 USPQ2d 1397, 1398 (Fed.Cir. 1989), W.L. Gore & Associates v. Garlock, Inc., 220 USPQ 303, 311-313 (Fed. Cir., 1983), and Ex parte Levensgood, 28 USPQ2d 1300 (Board of Appeals and Interferences, 1993); Ex parte Chicago Rawhide Manufacturing Co., 223 USPQ 351 (Board of Appeals 1984). As stated in In re Fine at 5 USPQ2d 1598:

"The PTO has the burden under section 103 to establish a prima facie case of obviousness. [citation omitted] It can satisfy this burden only by showing some objective teaching in the prior art or that knowledge generally available to one of ordinary skill in the art would lead that individual to combine the relevant teachings of the references."

And, at 5 USPQ2d 1600:

"One cannot use hindsight reconstruction to pick and choose among isolated disclosures in the prior art to deprecate the claimed invention."

Following this authority, the MPEP states that the examiner must provide such an objective basis for combining the teachings of the applied prior art. In constructing such rejections, MPEP 2143.01 provides specific instructions as to what must be shown in order to extract specific teachings from the individual references:

"Obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention when there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. In re Fine, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988); In re Jones, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992)."

* * * * *

"The mere fact that references can be combined or modified does not render the resultant combination obvious unless the prior art also suggests the desirability of the combination." In re Mills, 916 F.2d 680, 16 USPQ2d 1430 (Fed. Cir. 1990)."

* * * * *

"A statement that modifications of the prior art to meet the claimed invention would have been 'well within the ordinary skill of the art at the time the claimed invention was made' because the references relied upon teach that all aspects of the claimed invention were individually known in the art is not sufficient to establish a prima facie case of obviousness without some objective reason to combine the teachings of the references. Ex parte Levengood, 28 USPQ2d 1300 (Bd.Pat.App. & Inter. 1993)."

Here, there is set forth no objective basis for combining the teachings of the references in the manner used by this rejection, and selecting the helpful portions from each reference while ignoring the unhelpful portions. An objective basis is one set forth in the art or which can be established by a declaration, not one that can be developed in light of the present disclosure. The explanation of the rejection asserts that it would be obvious to

combine the references to curb undesirable porosity (Office Action, page 5, lines 1-5). The approach of Vincent for coating paper has utterly nothing to do with reducing porosity in a composite material, or why porosity reduction is relevant to claim 14.. If the rejection is maintained, Applicant asks that the Examiner set forth the objective basis found in the references themselves for combining the teachings of the references, and for adopting only the helpful teachings of each reference and disregarding the unhelpful teachings of the reference.

The remaining requirement of MPEP 2142 is that there must be a reasonable expectation of success. Because Vincent has nothing to do with curbing undesirable porosity, there is no reasonable expectation of success that combining the teachings of Vincent and Szweda will result in reduced porosity.

Claim 15 recites a negative limitation:

"preparing the indicator paint that does not emit light when subjected to the mechanical impact."

The explanation of the rejection does not point to any location in either reference where such a negative limitation is set forth. When a negative limitation is recited, there must be a disclosure of the negative limitation in order to support a sec. 103 rejection.

Claim 16 recites another negative limitation:

"not instrumenting the material having the paint thereon with light-detection instrumentation."

The explanation of the rejection does not point to any location in Vincent where such a negative limitation is set forth. When a negative limitation is recited, there must be a disclosure of the negative limitation in order to support a sec. 103 rejection.

Claim 24 recites in part:

"preparing the indicator paint as a mixture of the first reactant and the second reactant."

Neither reference has any such teaching.

Applicant asks that the Examiner reconsider and withdraw this ground of rejection.

Ground 5. Claims 12, 13, 18, and 19 are rejected under 35 USC 103 over Vincent and Szweda, and further in view of Yamamura. Applicant traverses this ground of rejection.

Claims 12 and 13 depend from claim 1 and incorporate its limitations. The combination of Vincent and Szweda does not teach the limitations of claim 1 for the reasons discussed in relation to Ground 3, and which are incorporated here. Claims 18 and 19 depend from claim 14 and incorporate its limitations. The combination of Vincent and Szweda does not teach the limitations of claim 14 for the reasons discussed in relation to Ground 4, and which are incorporated here. Yamamura adds nothing in this regard. Accordingly, claims 12, 13, 18, and 19 are allowable over this ground of rejection.

Additionally, each of claims 12 and 18 recites in part:

determining a design limit for the composite material responsive to an observability of impact indications.

Each of claims 13 and 19 recites in part:

“determining a first design limit for the composite material in the event that it has the indicator paint applied thereto, and a second design limit for the composite material in the event that it has no indicator paint applied thereto.”

The explanation of the rejection admits that the combination of Vincent and Szweda does not teach these limitations.

Yamamura at col. 6, lines 52-64 and Table 4 is relied upon to teach these claim limitations. Applicant can only surmise that the explanation of the rejection is referring to the discussion of K_{IC} at these locations. K_{IC} is not a “design limit”. K_{IC} is a measured material property, see Yamamura at col. 6, lines 62-64.

Here, there is set forth no objective basis for combining the teachings of the references in the manner used by this rejection, and selecting the helpful portions from each reference while ignoring the unhelpful portions. An objective basis is one set forth in the art

or which can be established by a declaration, not one that can be developed in light of the present disclosure.

The argued basis is set forth at page 6, lines 5-10, "...it would have been obvious...to modify Vincent et al. and Szweda et al. according to the teachings of Yamamura et al. for the purpose of, providing a ceramic composite material with a critical stress factor to achieve a great improvement in the inherent brittleness and non-uniformity in the mechanical strength of ceramics and a composite material that is suitable for use as a structure material..." The problem with this argument is that Vincent has nothing to do with composite materials or ceramic materials or ceramic composite materials. At col. 4, lines 14-24, Vincent describes his substrates of interest: paper, plastic, and fabric or textile webs. There is no teaching of composite materials or ceramic materials or ceramic composite materials. So the argument of producing an improved ceramic composite material states a possible result of Yamamura, but it has nothing to do with a reason for combining the teachings of Vincent and Yamamura.

If the rejection is maintained, Applicant asks that the Examiner set forth the objective basis found in the references themselves for combining the teachings of the references, and for adopting only the helpful teachings of each reference and disregarding the unhelpful teachings of the reference.

MPEP 2142 also provides that there must be a reasonable expectation of success in combining the teachings of the references. The explanation of the rejection did not explain how combining the teachings of Yamamura concerning fiber-reinforced ceramic composites could improve the paper, plastic, or fabric or textile webs discussed by Vincent. If the rejection is maintained, Applicant asks that the Examiner address this point. In fact, Vincent and Yamamura deal with completely different and unrelated subject matter, and there is no basis for combining their teachings.

Applicant asks that the Examiner reconsider and withdraw this ground of rejection.

CONCLUSION

For at least the reasons set forth above, Applicant respectfully requests reconsideration of the Application and withdrawal of all outstanding objections and rejections. Applicant respectfully submits that the claims are not anticipated by, nor rendered obvious in view of, the cited art either alone or in combination and thus, are in condition for allowance. Thus, Applicant requests allowance of all pending claims in a timely manner. If the Examiner believes that prosecution of this Application could be expedited by a telephone conference, the Examiner is encouraged to contact the Applicant's undersigned representative.

This Response is filed within four (4) months of the mailing date of the Office Action. The requisite request for one month extension of time and associated fee of \$60 is filed contemporaneously with this response, and the Patent Office authorized to charge the Deposit Account. No 5-1059, of the undersigned for this amount. In the event that Applicant is mistaken in these calculations, the Commissioner is hereby authorized to deduct any fees determined by the Patent Office to be due from the undersigned's Deposit Account No. 50-1059.

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